

ABSTRACT OF THE DISCLOSURE

A method for the production of an enzyme, which comprises culturing in a medium a strain that belongs to a bacterium classified into *Cytophagales* or *Actinomycetes*, or a new bacterium *Chryseobacterium* sp. No. 9670 belonging to the genus *Chryseobacterium*, and has the ability to produce an enzyme having a property to deamidate amido groups in protein, thereby effecting production of the enzyme, and subsequently collecting the enzyme from the culture mixture and a method for the modification of protein making use of a novel enzyme which directly acts upon amido groups in protein, as well as a gene which encodes the enzyme, a recombinant vector which contains the gene, a transformant transformed with the vector and a method in which the transformant is cultured in a medium to effect production of the protein-deamidating enzyme and then the protein-deamidating enzyme is collected from the culture mixture. It is possible to provide a novel protein-deamidating enzyme which has an activity to release side chain carboxyl groups and ammonia from a protein by acting upon side chain amido groups in the protein, a microorganism capable of producing the same, a gene encoding the same, a production process therefor and use thereof.